

What is the relationship between the intake of soy protein and body weight?

Conclusion

A moderate body of consistent evidence finds no unique benefit of soy protein intake on body weight.

Grade: Moderate

Overall strength of the available supporting evidence: Strong; Moderate; Limited; Expert Opinion Only; Grade not assignable For additional information regarding how to interpret grades [click here](#).

Evidence Summary Overview

This review included four articles that examined the relationship between intake of soy protein and measures of body weight published since 2000. One systematic review (Cope, 2008), one randomized controlled trial (RCT) (Liao, 2007), one crossover trial (McVeigh, 2006) and one cross-sectional study (Pan, 2008) were included in the review.

Cope and colleagues (2008) completed a systematic review including 91 international references with data from in vitro, animal, epidemiologic and clinical studies evaluating the relationship between soy foods, including soy protein and weight loss. The authors reported that studies with overweight and obese individuals suggest that soy, as a source of dietary protein, may be used to achieve significant weight loss; however, there is no convincing evidence to show whether soy protein is better than other protein sources to achieve weight loss when prescribed at isocaloric levels. Three additional studies identified in the NEL review support the conclusion by Cope et al, (2008). In an eight-week RCT, Liao et al, (2007) compared two 1,200kcal per day diets varying in protein source (soy as the only protein source vs. animal and plant protein sources). Body weight, BMI, body fat percentage and waist circumference decreased within both groups, but there were no significant differences between groups. In a randomized crossover trial, McVeigh and colleagues (2006) did not observe a difference in body weight, BMI or percent body fat following 57 days of supplementation with milk protein isolate or soy protein isolate. Finally, in the Nutrition and Health of Aging Population Project in China, no significant association was observed between soy protein intake and central obesity.

Evidence summary paragraphs:

Systematic Review

Cope et al, 2008 (neutral quality), a systematic review including 91 international references, identified and evaluated evidence regarding soy foods and weight loss. Data from in vitro, animal, epidemiologic and clinical studies were evaluated and summarized. The authors reported that studies investigating weight loss in overweight and obese humans suggest that soy, as a source of dietary protein, may be used to achieve significant weight loss; however, there is no convincing evidence to show whether soy protein is better than other protein sources to achieve weight loss. Additionally, clinical data suggest that soy protein may be as good as other protein sources for achieving weight loss in prescribed isocaloric settings, but suggest that soy consumption does not


have a clear advantage over other protein sources for weight and fat loss when prescribed at isocaloric levels. The authors noted that additional evidence is needed before making firm conclusions regarding soy foods and weight loss.

Primary Citations



Liao et al., 2007 (positive quality), an RCT, examined the effects of a soy-based diet compared with a traditional low-calorie diet on weight loss and blood lipid levels in 30 obese adults (mean BMI 29-30kg/m²; 80% female) in China. Participants were randomized to two groups: The soy-based low-calorie group consumed soy protein as the only protein source, and the traditional low-calorie group consumed two-thirds animal protein and the rest plant protein in a 1,200kcal per day diet for eight weeks. Anthropometric data were acquired every week and biochemical data from before and after the eight-week experiment were compared. Body weight, BMI, body fat percentage, and waist circumference significantly decreased within both groups (P<0.05), but there were no significant differences between groups.

McVeigh et al, 2006 (neutral quality) examined the effects of soy protein varying in isoflavone content on serum lipids in healthy young men (age 27.9±5.7 years) in a randomized crossover trial in Canada. 35 of 43 participants completed the study (19% dropout rate). Participants consumed their habitual diet plus milk protein isolate (MPI), low-isoflavone soy protein isolate (low-iso SPI; 1.64±0.19 mg aglycone isoflavones per day) and high isoflavone SPI (high-iso SPI; 61.7±7.4mg aglycone isoflavones per day) for 57 days each, separated by four-week washout periods. Height and weight were measured by study personnel at baseline and every study visit. Body composition was measured using bioelectrical impedance analysis (BIA) on days one and 57 of each treatment period. During the study, there were no significant effects of treatment or treatment order on anthropometric measurements, including body weight, BMI, and percentage body fat (data not provided).

Pan et al, 2008 (neutral quality) evaluated the association between soy protein intake and the risk of MetS and its components in a cross-sectional analysis of 2,811 adults (58% female; age 58.4 plus 6.0 years) from the Nutrition and Health of Aging Population in China Project. Anthropometric measurements were conducted by trained staff and physicians. Data on nutrient intake in the year prior to enrollment were derived from a quantitative food frequency questionnaire (FFQ) that was administered during a personal interview. The FFQ included 74 food items and groups. Seven soy food items responsible for the majority of soy consumption were listed within the questionnaire, including fresh and dried soybeans, tofu, soy milk, jelly bean curd, soy sauce and other processed soy products. No significant association was observed between soy protein intake and central obesity for men (P for trend=0.655), women (P for trend=0.827), or for men and women combined (P for trend=0.757).

 [View table in new window](#)


Author, Year, Study Design, Class, Rating	Location	Soy Protein Association (Pos, Neg, None)


Cope MB et al 2008 Study Design: Systematic Review Class: M Rating: 		Ø
Liao et al 2007 Study Design: randomized intervention trial Class: A Rating: 	China.	Ø
McVeigh et al 2006 Study Design: randomized crossover trial Class: A Rating: 	Canada.	Ø
Pan et al 2008 Study Design: cross sectional study Class: D Rating: 	Nutrition and Health of Aging Population Project China.	Ø

Research Design and Implementation Rating Summary


For a summary of the Research Design and Implementation Rating results, [click here](#).


Worksheets

 [Cope MB, Erdman JW Jr, Allison DB. The potential role of soyfoods in weight and adiposity reduction: an evidence-based review. *Obes Rev*. 2008 May;9\(3\):219-35.](#)

 [Liao FH, Shieh MJ, Yang SC, Lin SH, Chien YW. Effectiveness of a soy-based compared with a traditional low-calorie diet on weight loss and lipid levels in overweight adults. *Nutrition*. 2007](#)

[Jul-Aug;23\(7-8\):551-6](#)

 [McVeigh BL, Dillingham BL, Lampe JW, Duncan AM. Effect of soy protein varying in isoflavone content on serum lipids in healthy young men. Am J Clin Nutr. 2006 Feb;83\(2\):244-51.](#)

 [Pan A, Franco OH, Ye J, Demark-Wahnefried W, Ye X, Yu Z, Li H, Lin X. Soy protein intake has sex-specific effects on the risk of metabolic syndrome in middle-aged and elderly Chinese. J Nutr. 2008 Dec;138\(12\):2413-21.](#)